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Journal of the ISTE Special Interest Group for Logo-Using Educators

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# LOGO EXCHANGE

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December 1989

Volume 8 Number 4

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Snowmen  
Children make snowmen with snowflakes  
in winter time. Children think  
making a snowman is fun.



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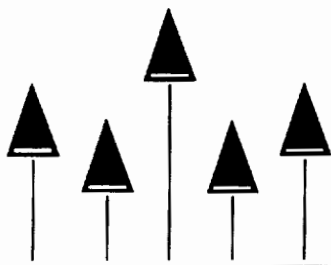
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# LOGO EXCHANGE

Volume 8 Number 4

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## From the Editor

### Happy Holidays!

You awaken very early on a crisp, clear holiday morning. You feel refreshed and renewed. The hectic pre-vacation days at school are over and now it is time for family and friends. You wander into the living room of the silent house. There in the corner of the room is a pile of gifts that you have never seen before. Curiously, you go over to look at them. To your amazement, they are all addressed to you! None of the tags say who they are from. Who could have left them? Their colorful paper and sparkley bows are a temptation too hard to resist. . . Should you wait until the family arrives, or should you take a peak?

Like a naughty child, you tentatively shake the colorful green and white package on top. Something in it rattles just a bit. It 's rather heavy – better be careful. Perhaps it is breakable. Curiosity overcomes you. You carefully remove the wrapping paper and open the box. What is this? A new version of Logo that works on the computers in your classroom. . . A quick look at the manuals gives you an overview of the features. Wow! This is the Logo you have always dreamed of. It has amazing capabilities which you and your students will love using. But wait. You haven't heard any announcements about new Logo versions. Where could it have come from? Who could have given this to you? Well, in any case, later today you'll simply have to try it out. How much easier it will make your classroom use of Logo. How much more your students will be able to accomplish!

Now your curiosity is really peaked. What could be in these other mysterious boxes? Still no sounds from the family, so you decide to be even more daring. The next box, a flat one wrapped in blue paper with silver ribbons, tempts you. Again, you tentatively open it. It's a brochure for a new computer system – one you had no idea was available. Look at the features! It will even run that new version of Logo that you just opened. And there's so much memory. And fantastic sound capabilities. And look at the colors available. If only you had machines like that at school. But what's this other piece of paper? Hmmm. It's a letter to all teachers in your school. All of the old equipment is being replaced with these new models. Every classroom will have a color laser printer, a modem, and a network of its own. It's a dream come true. There will even be a large library of software provided. Someone was really thinking ahead. Just imagine how much more your students can learn. You simply can't believe it! What a wonderful holiday gift. How did your school manage it?

Now you know you can't stop. The next box, a big one with red paper and gold bows is almost cubical in shape. This time you rip off the paper and ribbons – after all, these packages are clearly for you. What is this? A doll house? You look closer. No, not a doll house – more like a doll school. No, it's **your** classroom, except that it has been remodeled. Look at all of the space, the storage cabinets, the facilities. What a neat science corner, and there's a well designed space for those new computers, and every kind of audio visual aide imaginable. There's even a computer station built right into your desk. Then you notice the memo – the school is being remodeled over the holidays and you will return to a classroom that looks just like this. Wow! Just think how much more productive you will be able to be with this wonderful new facility. You won't have to waste your time using makeshift equipment or shuffling materials to find more storage space. Your students will learn so much more.

There's just one more of these mysterious boxes. It's a strange one – sort of shimmery in it's gold paper. Almost hard to look at. Wait. This one has a tag. It says "Open with care. Contains perfect students." "Perfect students?" What is a perfect student? The difficult moments you have had with various members of your class flash through your mind. Their faces are clear in your mind's eye. "Perfect students?" Hmmm. You open the box – and somehow you see your class, all perfectly behaved. Time flashes past – the school day flows without a single moment of difficulty in that shiney new classroom with the beautiful new equipment. As the children leave the room, you feel empty. Did you really teach these perfect students anything? Did it even matter that you were there? Wait a minute. How long have you been sitting here in the midst of boxes and wrapping paper. You mutter "perfect students...perfect students...perfect students..."

...and you open your eyes. It's morning. "Perfect students." Wait. You rush to the living room. There are no mysterious packages. "Perfect students." You sit down in a nearby chair, feeling dejected. It was such a wonderful dream. Everything you could possibly want to make education in your classroom better. All those things that you and your colleagues complain about were fixed. If only the dream had been true. You'd be so much more effective.

Perfect students, a perfect classroom – a dream come true. But wait a minute. Those perfect students weren't particularly interesting. Did they even need you? Did they learn anything as they sat angelically in that high tech classroom?

You're a teacher – a teacher of real kids. You don't need all of those wonderful facilities to do your job. Certainly there's more to education than magnificent hardware and software. You have a great deal to give your students that no technology or facility can ever give. You encourage, you nurture, you motivate, you criticize, and you love.—whether they are perfect or not. No computer, no piece of software, no physical plant can do that. It's up to you and your colleagues to make education better. You mood lifts. You resolve to return to the new year refreshed and renewed, knowing that your role is central if education in your school, city, or country is to improve.

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## About the Cover

This month's cover was created by Christina Coffin and Tara Engan. These first graders were students in a LogoWriter lab in Colts Neck Township Schools. Their teacher is Jandy Bird, whose article on cooperative learning using Logo is found in this issue.

## Great Lakes/East Coast Logo Conference

**Sponsored by: Educational Computer Consortium of Ohio (ECCO)**

**Where: Cleveland, Ohio**

**When: May 4 - 5th, 1990.**

**Preconference workshops on May 3.**

**Keynote Speaker: Seymour Papert**

**In addition, there will be four categories of presentations:**

### PreConference Workshops:

These workshops will be six hours in length and will be held on May 3rd. Workshop topics will go beyond beginning turtle graphics and offer participants new ideas and challenges.

### Poster Presentations:

These sessions will offer an opportunity to share a particular idea. Three presentors will be scheduled each hour. Presentations will cover specific teaching ideas, lesson plans, or classroom activities.

### Session Presentations:

These sessions will be approximately an hour long. Presentations will cover classroom ideas, research project reports, innovative uses of Logo, and Logo connections.

### Conference Workshops:

These workshops will be held during the conference and will be approximately 3 hours in length. Workshops will cover either beginning or advanced ideas

**For more information, contact**

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**216-461-0800**

## Monthly Musing

ST, HT

by Tom Lough

"There's a good chance we'll see some turtles tonight!" Kevin McIntyre shouted above the roar of the twin Evinrude outboards as the boat neared Buck Island. Kevin was a naturalist working on temporary assignment with the National Park Service in the US Virgin Islands. His project was to observe and record any nestings of sea turtles on the rocky beaches of the Buck Island preserve.

I had taken the evening off from the Logo in Paradise course I was teaching with Glen Bull and Dennis Harper at the University of the Virgin Islands. Dennis' son, J, and I had been lucky enough to be invited to Buck Island as VIP's. We found out that VIP meant Volunteer In the Park, and it qualified us to carry equipment, hold flashlights, and perform other acts to assist Kevin. Just then, being a VIP meant helping to moor the boat and prepare for the nocturnal beach patrol.

Our first job was to wait for dark. We clambered over the rocks, trees and sand to the easternmost point of the nesting beach, spread out plastic sheets and sat down on them. While the scarlet sun sank into the ocean, I began thinking about what might happen later. Somewhere in the water nearby there may be a female sea turtle waiting for just the right moment to clamber ashore, dig a hole and lay her eggs. I couldn't wait!

Of course, it is no surprise that I was also thinking about Logo! All of a sudden, the commands SHOWTURTLE and HIDE TURTLE took on new meaning for me. I thought about a set of procedures which seemed appropriate for the situation.

```

TO LAND?
IF XCOR > 0 [OUTPUT "TRUE]
OUTPUT "FALSE
END

TO OCEAN?
IF XCOR < 1 [OUTPUT "TRUE]
OUTPUT "FALSE
END

TO MOVE :DISTANCE
REPEAT :DISTANCE [FORWARD 1 CHECK]
END

TO CHECK
IF LAND? [SHOWTURTLE PENDOWN]
IF OCEAN? [HIDE TURTLE PENUP]
END

```

Use MOVE instead of FORWARD. When the turtle is on "land," then you can see her tracks. When she is in the

"ocean," you can't really tell exactly where she is! What activities can you create using these procedures?

Meanwhile, the sky had grown dark and was speckled with stars. Kevin quietly announced that our trek was about to begin. We trudged silently up and down the beach for what seemed like an eternity. Suddenly, in the wee small hours, Kevin froze! Motionless, he concentrated on the sounds and smells of the night. Then he signalled for us to sit down. A turtle was nesting nearby! This was definitely SHOWTURTLE time!

After about fifteen minutes, Kevin made a brief foray into the trees next to the beach and returned to whisper excitedly, "She's a hawksbill! She's digging her hole now and will be laying the eggs in about 30 minutes!" While we waited on the beach, I was overwhelmed by the idea that these magnificent reptiles had been performing this same act for millions of years. I felt very privileged for the observation I was about to make. Soon Kevin announced that we could approach the turtle. She had settled into a hole as big as her shell (about 80 centimeters across) and then had dug a smaller deeper hole with her hind flippers for the eggs. When sea turtles are in the act of laying their eggs, they go into a sort of trance, so we could get quite close without disturbing her. By the light of Kevin's flashlight, we could see the glistening spheres of her eggs as they dropped softly into the nest, 160 of them in all.

Hesitantly, I reached out my hand and touched her shell, then a flipper. It was a magical moment. All too soon, Kevin motioned for us to return to the beach. The turtle began to cover her precious eggs with sand. After about 30 minutes, her job was finished and she clambered down the embankment toward the water. I couldn't help but follow. She showed no real fear of me. As she reached the water, she paused as if to bid me farewell. She entered the surf, slowly at first, then with increasing speed. In a sudden swirl of froth, she was gone. HIDE TURTLE.

I have thought about that night many times. Thanks, Kevin, for that close encounter with a turtle of the real kind. We will be impoverished indeed if we allow these wonderful creatures to become extinct.

ST FD 100!

Tom Lough, Founding Editor  
Box 394, Simsbury, CT 06070

PS: If you or your students wish to become active in helping to save endangered turtle species, write for information to: Help Endangered Animals, Ridley Turtles, PO Box 681231, Houston, TX 77268.

## Logo Ideas

### Time, Numbers, and Other Things

by Eadie Adamson

#### How Big Can It Be?

Last spring during one of my fourth grade classes, we began talking about numbers, specifically, how large a number could LogoWriter handle? It was a good chance for my grade to think about how to solve a problem. It didn't take them long to choose a strategy.

"Let's just try a really big number," said one. "If Logo doesn't complain, we'll make it bigger. If it does complain we'll make it smaller, till we find the largest number we can use without an error message."

Off they went, using the `print` command. That task did not take long (I leave it to you and/or your classes to find the number!)

"That's great." I said. "I wonder how long it would take Logo to count to that number? How could we find out?"

#### Counting Up!!

Our first strategy was to write a procedure like this:

```
to countup :num
  print :num
  countup :num + 1
end
```

We began with `countup 1`. Much to our surprise, before the class time was up, we got an error message: **No more room for text on the page!** I helped my students modify the procedure so that it cleared the text each time, by adding the command `ct` to the `countup` procedure just before the recursive call. The procedure then looked like this:

```
to countup :num
  print :num
  ct
  countup :num + 1
end
```

Our adventure went on for several weeks, with the computer working weekends too. Students began coming in at all times of the day to see how our experiment was developing. After several weeks, with nearly everyone cooperating about leaving the test computer empty, sadly, one evening after school someone turned the computer off. We didn't discover it until the next morning. By that time we gave up on the

experiment. Not enough time was left in the school year to start again. Our question was never answered, but we had an idea that it took a really long time. We also found that the computer, though it was taking a long time, could count much faster than we could!

#### A Similar Question and a Request for Help

Recently I received a letter from Robert Macdonald (see November *LX* for an article about some of his work with students). To my delight, he had been working on a similar experiment with his students, but in his usual inventive way had combined it with other number investigations. Here's what his students wrote about their problem:

One of the first problems we encounter in our fourth grade mathematics class is: How much is a million? Earlier, during the third grade we attempted to collect one million bottle caps. It was quite a job.

Mr. Macdonald suggested we find out how long it would take a computer to count to a million.

The students proceeded to tell about their adventures running a race with three computers and a BASIC (!!) program which took between three and a half to four hours to complete the counting...

However, we like to use LogoWriter in our class not BASIC. When we programmed our initial program we were lucky to get up to 300 in a crawl:

```
to countup :input
  if :input = 100001 [stop]
  insert :input insert char 32
  countup :input + 1
end
```

The class contacted Sharon Yoder who suggested periodically clearing the screen, giving the students another procedure to try:

```
to count.and.clear :input :lines
  if :input = 1000001 [stop]
  if :lines = 18 [make "lines 0 ct]
  print :input
  count.and.clear :input + 1 :lines + 1
end
```

Sharon's solution sets up a counter. After every eighteen lines, the text is cleared. Meanwhile, besides counting, the procedure is checking for a maximum input. At each call to the procedure, the number (`:input`) and the number of lines is

### Logo Ideas--continued

incremented by one. The two stop rules operate each time, one checking whether the maximum number has been exceeded (and, if so, stopping) and the other keeping track of the number of lines, clearing the text when the number of lines equals eighteen.

Robert's students said "It took our computer 47 hours and 3 minutes to finish the count."

The class is seeking help to find a speedier way for Logo to count to a million. I had several other suggestions for them. First, write the counting procedure like this:

```
to countup :num
  if :num > 1000000 [stop]
  print :num
  countup :num + 1
end
```

This procedure, running on an Apple II GS at its FAST speed, will stop in approximately 15 hours. That's faster, but it won't beat the students' BASIC record. I had one other thought, however. Each time a procedure asks Logo to check something or to do something, it obviously takes a small amount of time. All we really want to know, if I understand their question, is: how fast can Logo count to a million? The issue is: what takes time and what do we need to do? Do we really need to print the answer? If not, perhaps the solution is as follows (and takes about 30 minutes on a GS):

```
to countup :num
  if :num > 1000000 [print :num -1
  stop]
  countup :num + 1
end
```

Then you can program a control key that will show you the number, so that there is a way to check on the progress:

```
when "z [show :num]
```

I consulted with Michael Tempel, Director of Educational Services for Logo Computer Systems, to see what he might add. Michael suggested that comparing the speed of programming languages was not really the point, although the time it takes to count to a million is obviously part of what interested the children. BASIC, Michael pointed out, is a much less complex language than LogoWriter. For real speed, he suggested writing the program in assembly language. Comparing two languages to another is like comparing apples and oranges. What Michael found much more interest-

ing and puzzling was the wide discrepancy in speed in the two Apple IIe computers the students used to test the Basic program: one took 3 hours and 25 minutes, while the other took 3 hours, 52 minutes and thirty seconds — a difference of nearly thirty minutes, much more than would seem logical.

Michael had another idea for solving the problem. Working in the Command Center, type the following:

```
make "num 0
repeat 999 [repeat 999 [make "num
:num + 1] print :num]
```

This should cause the computer to print the current number at every thousandth time it increments the number. The counting should stop at 1000000. Will it work? Try it out before reading on!

I adjusted Michael's idea a bit to get the result I wanted:

```
make "num 0
repeat 999 [repeat 1000 [make "num
:num + 1] print :num]
```

What's interesting about a problem like this is that it gets us thinking about the most efficient way to write a program to solve a problem. This is an idea students don't often appropriate easily. Usually something works and they will see little reason to make their procedure more elegant or more direct. Here is an instance in which going right to the simplest way to express the problem becomes important, since we are interested in speed. We then need to look more carefully at what we are doing, eliminate the unnecessary steps, tighten things up, perhaps even try a different approach. The experiment creates a nice opportunity to talk about programming style as well. Bob Macdonald, Michael, Sharon, and I each had a slightly different idea about how to approach the problem. It's an interesting lesson for students: ask for help when a problem seems insoluble. In this case several adults attempt to solve the problem by contributing a variety of solutions. I can't think of a better way to make the point that there's no one single correct way to do something in Logo, although one solution may end up being more efficient than others (the efficiency depending upon what the criteria is for a satisfactory solution). It's also good for students to see adults struggle to solve a programming problem, too!

Now...how long would it take LogoWriter to count to a number it couldn't handle? Can we express the problem better? I think we'll try again!



Other inventive solutions or suggestions are welcome. Write to Robert Macdonald's fourth grade class at:

Mr. Macdonald's Fourth Grade Room  
Meridian Elementary School  
26700 Meridian Road  
Grosse Ile, Michigan 48138

The children would love to hear from you. (P.S. Please send me a copy of any creative solutions, too!)

### On to Chaos

I had planned to write a column on the subject of chaos, but Phil Firstenbaum got there first (September *LX*. "Order from Chaos"). I was interested in his solution to this problem since mine was somewhat different (see below). This summer at the Eurologo Conference at the University of Ghent, Ghent, Belgium, several other people talked about experimenting with the chaos game with their classes. The idea of playing the game with Logo is clearly in the air everywhere! I thought, as a follow-up to Phil's article, I might share a few more ideas on the subject.

I first played with this idea when Michael Tempel and I flew together from New York to the West Coast Logo Conference in Los Angeles. Michael had a portable computer with him and a long plane ride seemed an ideal time to experiment. Later I too saw the Nova show on chaos and realized how much the audience missed, since they had no opportunity to see the intervening steps, to see a really graphic version of order finally emerging from a chaotic mess of dots. Here's the program I wrote (notice I added a control key so that I could print the screen as the process as it developed):

```
to chaos
  cg
  when "Z [printscreen]
  put.spots [1 2 3]
  doit
end

to put.spots :turtles
  if empty? :turtles [stop]
  tell first :turtles
  pu setpos list random 280 random 160
  dot
  put.spots butfirst :turtles
  tell 0
  pu
end
```

```
to doit
  name 1 + random 3 "turtle
  seth towards ask :turtle [pos]
  forward (distance
    ask :turtle [pos]) /2
  dot
  doit
end
```

```
to dot
  pd
  forward 0
  pu
end
```

\*\* The procedures distance and square are used to get the distance of the main turtle from a given set of coordinates: \*\*

```
to distance :away
  output sqrt (( square (xcor - first
    :away)) +
    (square (ycor - last :away) ))
end
```

```
to square :num
  output :num * :num
end
```

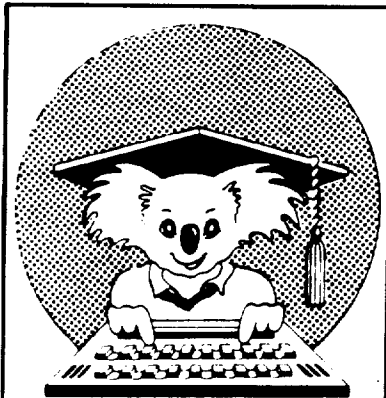
### European Connections

At the Eurologo conference one presenter shared his investigations of chaos. Several of us talked about experiences and ideas for exploring the chaos game with our students. For instance, are there any patterns other than triangles that act this way? The program could be adjusted to take a predetermined list of points to start with, instead of picking random spots, as Michael and I did. The turtle could then turn randomly to one of the points from the longer list, move halfway and deposit a dot. One could thus plot out an infinite variety of shapes and run tests to find the answer. This would be fun to do as an overnight run on several computers, each testing a different configuration of dots. Another idea to investigate, which won't take long, is to find out what happens if the pen is left down, rather than lifted until it makes a dot. Again, are there configurations which do give you interesting patterns with this method?

### Curioser and Curioser

Curiously, at the West Coast Logo Conference last February, Paul Goldenberg showed a fractal design which produces almost the same result as the completed chaos game picture. Here's a procedure which generates a similar fractal:

Logo Ideas - continued



# WCCE/90

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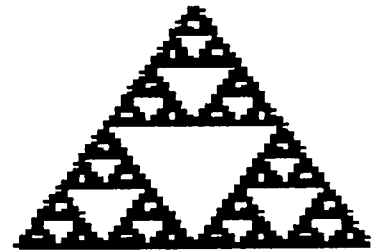
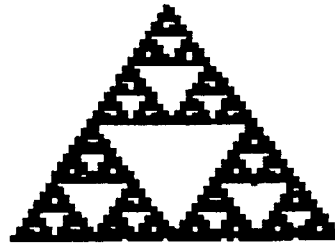
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```
to tri :comp :side
if :comp = 0 [stop]
repeat 3 [forward :side/2 left 120
(tri :comp - 1 :side /2 ) right
120 forward :side/2 right 120]
end
```

I used:

```
pu
back 50
pd
left 30
tri 6 60
```

to generate my fractal drawing. (Can you tell which is the fractal drawing and which is the drawing from the chaos experiment?)



(The top drawing is from the chaos experiment, the bottom one from the tri procedure.)

Eadie Adamson  
Allen Stevenson School, 132 East 78th Street  
New York, New York 10021

## A Primary Instant Program Leads to Theme Booklets

by Glenda Bentz

Typing can be a problem for primary-aged children (K-2). As they are learning about the turtle, they should need to use minimal typing skills. Kindergarten and first grade age children in my school use the one stroke instant program with a slow turtle that comes with LogoWriter. When second graders come to the computer lab, they use my own primary form of instant Logo which prints the "real" commands in the Command Center. These commands are the same ones they used in Kindergarten as F, B, R, L—with a slow turtle—but now they see the numbers and real commands. They do not have to hunt and peck to draw. Instead they use the up and down arrows to place the cursor on a command and then press the return key. Here are the commands they see in the Command Center when my instant program is run.

```
FORWARD 10
BACKWARD 10
RIGHT 30
LEFT 30
```

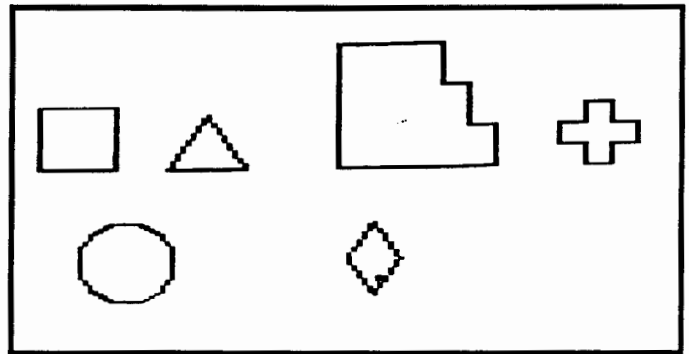
The FORWARD 10 command immediately scrolls up beyond view. However, the children quickly learn to hold down the up arrow to bring the FORWARD command back into view. They will often need this skill in the future. However, if the last CHAR 13 is left out of the procedure called 'C' shown below, the cursor will wait on LEFT 30 and leave all four commands in view. You might want to try the program both ways, before you decide which you prefer.

### Getting Started

During their first computer classes, the second graders use this program with a startup which forces them to begin a new drawing each lab period. If students need a fresh list of these basic commands, they go to a blank line in the Command Center by using the down arrow key and type 'C' followed by the Return key. If they want to start over with a clean screen and a fresh set of commands, they type 'D' and Return on any blank line in the Command Center. The C and D keys, arrows, and Return are the only keys they need to draw with the turtle.

I provide ideas for figures they might draw—particularly polygons and other regular shapes like fat crosses or stairs. Of course, they may always draw anything they would like to draw. If their learning is not progressing (i.e., diagonal lines and no noticeable shapes), I may add a challenge such as asking them to make as many polygons on the screen as they can. The big challenge for them is learning to draw a circle with these commands. FORWARD 10 AND RIGHT 30 repeated alternately will make a small circle. When the

students ask how to draw a circle, I ask them to walk in a small circle. What are they doing? The usual answer is "walking a little" and "turning a little". Now they must put "walking a little" and "turning a little" into turtle commands.



### Saving Student Work

During the last several lab classes, I make a directory,

```
CREATEDIR "ANIMALS
```

remove the startup procedure from the instant program, and save the new program by the teacher's name for each student in each class at each computer station. In the classroom, the teacher could make a file for each student by names or initials (no directory is needed in the classroom). Remove the startup procedure from the instant program and use the NAMEPAGE command to name a student's page and Escape to save. Continue to rename and save the pages until all the students are assigned their own page. Now each student can press Escape and save his work for another session for the first time.

### Making a Booklet

The final assignment is to draw an imaginary animal and then write about their original animals on the screen. When the assignment is made, we learn the Turtle Move keys (Open Apple-9) to allow moving the turtle without drawing, using the arrow keys. By now I can ask the students when making the assignment, if they can think of anything which will help them to draw more easily. They know they need a way to move the turtle without drawing and so we learn what we need as we progress.

At the end of each session, students need to be reminded to press Escape to return to the Contents page to have their work saved. From Kindergarten on, each student is expected to write his name at the top of the screen before beginning to draw with the turtle. This transition to the word processing stage is almost automatic, and many young students ask to write stories in their "original" spelling forms long before we

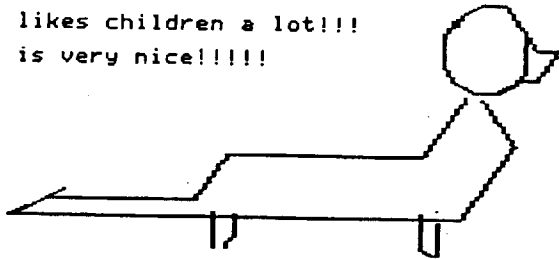
### Benz —continued

draw and write our class booklet of imaginary animals. If your students are not using the Up and Down command (Open-Apple U and Open-Apple D) to allow them to write on the screen, you will need to teach these commands as well.

When the second grade imaginary animals are all in print form, I use the Logo Alphabet from ISTE to title the book, paste it up, and copy it on legal paper using both sides of a page. The book is shared in the classroom, so each student can read and appreciate each and every animal. Sometimes the classroom teacher uses the books for a grammar lesson by asking students to find misused words such as 'to' for 'two' or to find misspelled words.

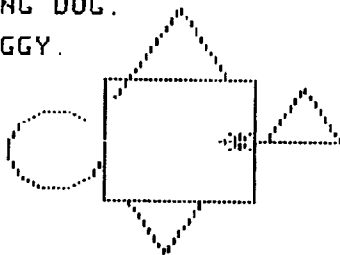
Katie Denes

My animal's name is Jo-Jo.  
He likes children a lot!!!  
He is very nice!!!!!!



KATEY GAFFNEY

THIS IS A FLYING DOG.  
HIS NAME IS DOGGY.



#### Two Imaginary Animals

Here is my Logowriter Primary Instant program listing without STARTUP:

```
TO BEGIN
SET.UP
DIRECTIONS
END
```

```
TO SET.UP
HT
CT
RG
CC
END
```

```
TO DIRECTIONS
```

```
PRINT [USE ARROW KEYS TO PLACE]
PRINT [BLINKING BOX ON COMMAND.]
PRINT [PRESS RETURN TO MAKE TURTLE]
PRINT [DO THE ACTION.]
PRINT []
PRINT [P = PRINTSCREEN]
PRINT [H = HELP PAGE]
PRINT []
PRINT [PRESS RETURN FOR COMMAND]
PRINT []
PRINT [PRESS RETURN NOW TO START]
PRINT READCHAR
SET.UP
ST
END
```

```
TO D
ST
RG
CC
RECYCLE
C
END
```

```
TO P
PRINTSCREEN
END
```

```
TO H
BEGIN
END
```

```
TO C
CC
(TYPE [REPEAT 10 [FORWARD 1]]
CHAR 13)
(TYPE [REPEAT 10 [BACKWARD 1]]
CHAR 13)
(TYPE [REPEAT 30 [RIGHT 1]] CHAR 13)
(TYPE [REPEAT 30 [LEFT 1]] CHAR 13)
END
```

Note: Leaving out the last CHAR 13, will leave all the commands in view in the Command Center.

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